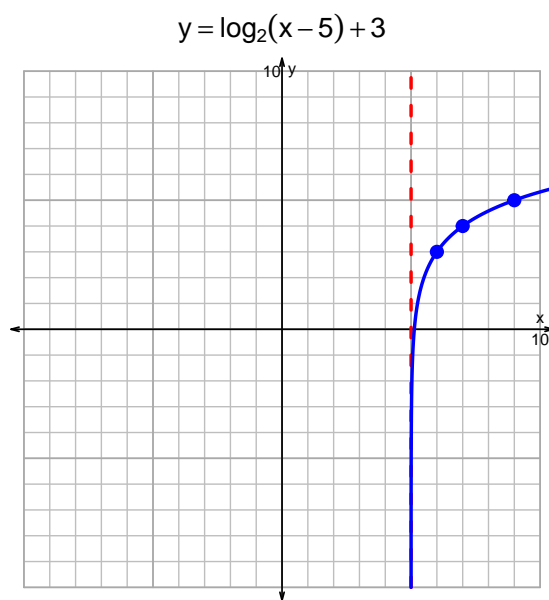
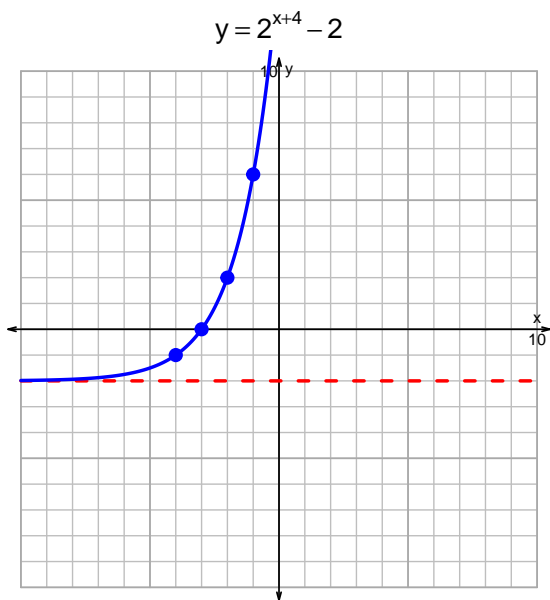


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v323)

1. (10 pts) Graph  $y = 2^{x+4} - 2$  and  $y = \log_2(x - 5) + 3$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .*

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$13 = \left(\frac{5}{4}\right) \cdot 10^{7t/3}$$

Divide both sides by  $\frac{5}{4}$ .

$$\frac{13 \cdot 4}{5} = 10^{7t/3}$$

Take log, base 10, of both sides.

$$\log_{10} \left( \frac{13 \cdot 4}{5} \right) = \frac{7t}{3}$$

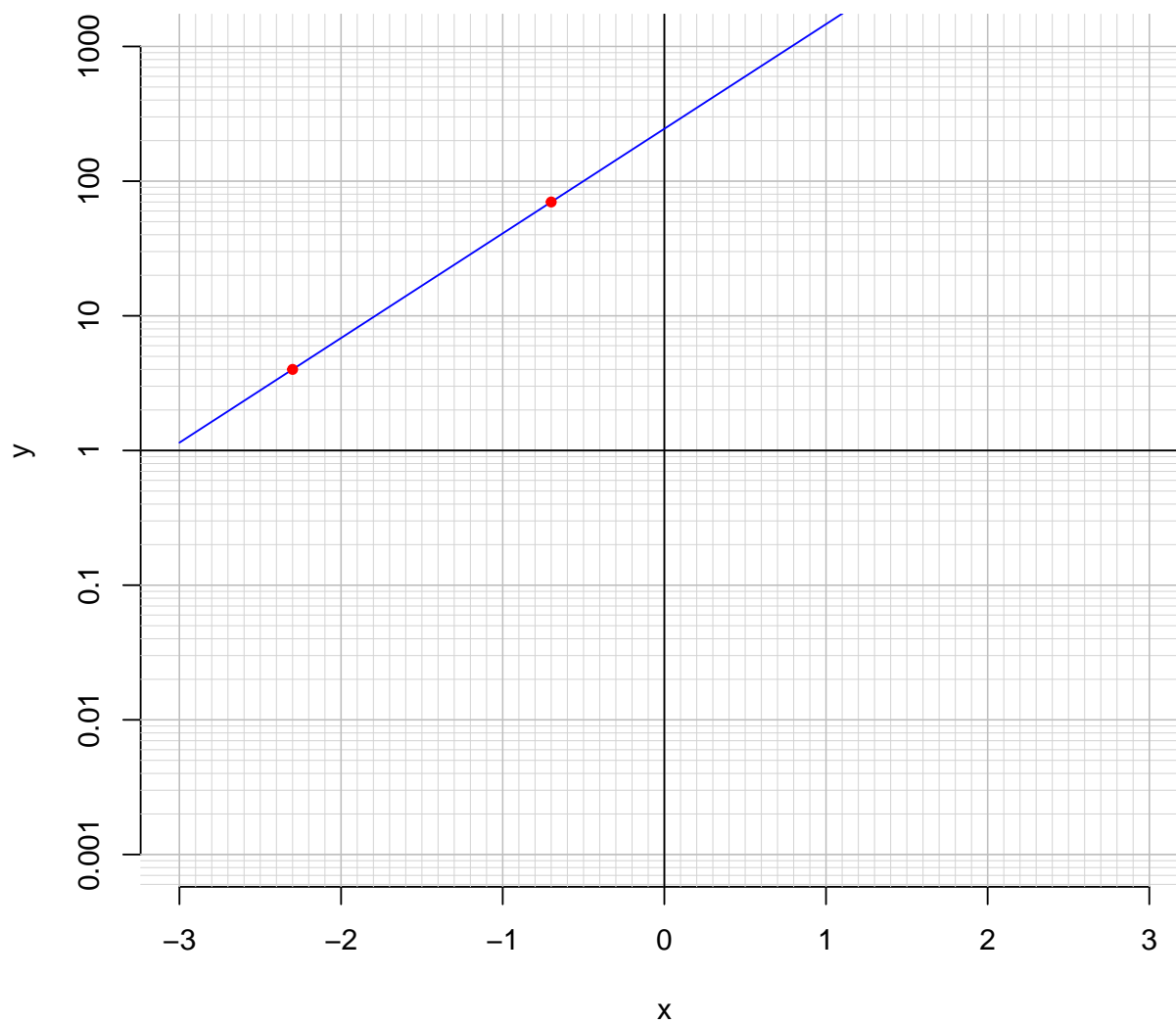
Divide both sides by  $\frac{7}{3}$ .

$$\frac{3}{7} \cdot \log_{10} \left( \frac{13 \cdot 4}{5} \right) = t$$

Switch sides.

$$t = \frac{3}{7} \cdot \log_{10} \left( \frac{13 \cdot 4}{5} \right)$$

3. (10 pts) An exponential function  $f(x) = 245 \cdot e^{1.79x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(-0.7)$ .

$$f(-0.7) = 70$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{1.79} \cdot \ln\left(\frac{x}{245}\right)$$

Using the plot above, evaluate  $f^{-1}(4)$ .

$$f^{-1}(4) = -2.3$$